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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte EUGENE C. PIKUS and DAVID N. NOHRE

Appeal 2009-005611
Application 10/733,499
Technology Center 3600

Decided: April 16, 2010

Before: LINDA E. HORNER, WILLIAM F. PATE III, and STEVEN D.A.
MCCARTHY, *Administrative Patent Judges*.

HORNER, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Eugene C. Pikus et al. (Appellants) seek our review under 35 U.S.C. § 134 of the Examiner's decision rejecting claims 1-18 and 21-26, which are all of the claims on appeal. We have jurisdiction under 35 U.S.C. § 6(b). We affirm.

THE INVENTION

Appellants' claimed invention is a "fuze setter capable of transmitting a magnetic inductive power carrier signal and a separate high speed data signal." Spec. 1:5-8. Claim 1, reproduced below, is representative of the subject matter on appeal.

1. A system for programming a fuze comprising:
a fuze having a power receiver and a data receiver; and
a fuze setter having a power transmitter and a data transmitter;
wherein operational power for the fuze is inductively transmitted from the power transmitter to the power receiver; and pre-launch fuze setting data is transmitted from the data transmitter to the data receiver via an electromagnetic signal selected from a group consisting of the infrared, RF, visible and UV bands of the electromagnetic spectrum.

THE EVIDENCE

The Examiner relies upon the following evidence:

Cumming	US 4,144,815	Mar. 20, 1979
Koerner	US 4,495,851	Jan. 29, 1985
Keil	US 6,176,168 B1	Jan. 23, 2001

THE REJECTIONS

Appellants seek review of the following rejections by the Examiner:

1. Rejection of claims 1-14, 16-18, and 21-24 under 35 U.S.C. § 103(a) as unpatentable over Cumming and Keil.

2. Rejection of claims 15, 25, and 26 under 35 U.S.C. § 103(a) as unpatentable over Cumming, Keil, and Koerner.

ISSUES

The Examiner concluded claims 1-14, 16-18, and 21-24 were unpatentable over Cumming and Keil, because modification of Cumming's system to replace Cumming's transmission of operational power for the fuze via microwave with Keil's transmission of operational power to the fuze via induction was a simple substitution of one known equivalent element for another to obtain a predictable result. Ans. 4-5, 7-8.

Appellants argue claims 1, 2, 5, 8-10, 12-14, 18, and 21-24 as a group. App. Br. 6-13. We select claim 1 as the representative claim, and claims 2, 5, 8-20, 12-14, 18, and 21-24 stand or fall with claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2009). Appellants do not contest the Examiner's findings that Cumming discloses a system that transmits both operational power and setting data to a fuze via a microwave signal while the fuze is chambered in a gun barrel, and that Keil discloses a system that uses inductive coils to transmit both power and setting data to a fuze via an inductive signal. Ans. 3-5; App. Br. 7. Appellants argue that the Examiner has not provided a sufficient reason with a rational underpinning to explain why one having ordinary skill in the art would have combined the references to reach the claimed subject matter. App. Br. 6-13; Reply Br. 4-13.

Appellants present separate arguments for claims 3, 4, 6, 7, 11, 16, and 17. App. Br. 13-16; Reply Br. 13-15.

The issues before us are:

Is the proposed rejection based upon a sufficient reason with a rational underpinning to explain why one having ordinary skill in the art would have

combined Cumming and Keil to reach the subject matter of independent claim 1?

Would the combination of Cumming and Keil have led a person having ordinary skill in the art to the subject matter of claims 3, 4, 6, 7, 11, 16, and 17?

The Examiner found that Koerner discloses a system for programming a fuze that simultaneously transmits fuze setting data and operational power to the fuze. Ans. 6. The Examiner concluded that it would have been obvious to further modify the proposed combination of Cumming and Keil to transmit operational power and setting data simultaneously as taught by Koerner in order to provide the predictable result of faster programming. Ans. 6-7.

Appellants argue claims 15, 25, and 26 as a group. App. Br. 17-18; Reply Br. 16. We select claim 15 as the representative claim, and claims 25 and 26 stand or fall with claim 15. *See* 37 C.F.R. § 41.37(c)(1)(vii). Appellants contend Koerner teaches simultaneous transmission of operational power and setting data by a microwave signal, while in contrast, claim 15 requires simultaneous transmission of operational power by induction and data by electromagnetic signal (infrared, RF, visible and UV bands of the electromagnetic spectrum). App. Br. 17-18, Reply Br. 16.

The issue before us is:

Is the rejection of claim 15 in error due to the fact that Cumming, Keil, and Koerner, taken individually, do not disclose or suggest simultaneous transmission of operational power via an inductive waveform and data transmission by electromagnetic signal?

ANALYSIS

Rejection of claims 1-14, 16-18, and 21-24 under 35 U.S.C. § 103(a) as unpatentable over Cumming and Keil

Claims 1, 2, 5, 8-10, 12-14, 18, and 21-24

Appellants characterize the proposed combination as using both microwave communication (Cumming) and inductive communication (Keil). App. Br. 9. The Examiner attempted to correct this misinterpretation by stating that “appellant mistakenly argues that the resulting device would comprise a fuze setter having two operational power transmitters and two data transmitters and [a] fuze having two power receivers and two data receivers.” Ans. 9. The Examiner went on to explain that the proposed combination uses Keil’s inductive transmission of operational power and Cumming’s microwave transmission of data. *Id.*

Some of Appellants’ arguments are premised on this mistaken characterization of the proposed combination. For example, Appellants argue that using both types of communication for transmitting power and data would transmit redundant data and therefore would not transfer more information than the claimed device (App. Br. 10-11; Reply Br. 5-9). Appellants also argue there is no reasonable expectation of success because the prior art does not teach a structure capable of receiving and interpreting dual signals (Reply Br. 4-5). Because these arguments are not directed to the Examiner’s proposed combination, they are unconvincing.

Claim 1 is directed to a system for programming a fuze comprising a fuze and a fuze setter. The fuze setter transmits operational power to the fuze via induction, and transmits setting data to the fuze via an electromagnetic signal from the group consisting of: infrared, RF, visible and UV bands of the electromagnetic spectrum. In other words, the fuze

receives power inductively and receives data by electromagnetic signal (infrared, RF, visible and UV bands of the electromagnetic spectrum).

As stated in the Issues section, *supra*, Appellants do not contest that Cumming discloses a system that transmits both operational power and setting data to a fuze via a microwave signal, and that Keil discloses a system that transmits both operational power and setting data to a fuze via induction. Ans. 3-5; App. Br. 7. Thus, it was known in the art that operational power and data can each be transmitted to a fuze by either microwave or induction. Appellants have admitted as much, stating that “[a] person of ordinary skill in the art would recognize that Cumming and Keil teach alternative solutions for a similar problem – powering and setting a fuze.” App. Br. 9.

Given this state of the art, replacing Cumming’s transmission of operational power via microwave with Keil’s transmission of power via induction involves only the simple substitution of one known method of transmission of operational power for another. A prima facie conclusion of obviousness may be supported by a showing that the claims are directed to a process, machine, manufacture, or composition of matter already known in the prior art that is altered by the mere substitution of one element for another known in the field, and such modification yields a predictable result. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007) (citing *United States v. Adams*, 383 U.S. 39, 40 (1966)). The rejection does not rely upon impermissible hindsight, but rather relies on the knowledge of one of ordinary skill in the art at the time of the invention that operational power can be transmitted to a fuze via either microwave or induction, so that one method may be substituted for another. U.S. Patent 5,343,795 to Ziemba,

which is incorporated by reference in its entirety in Keil,¹ supports this conclusion by disclosing that data may be transmitted from a fuze setter to a fuze by microwave or induction. Ziembra, col. 1, ll. 40-45

While, as Appellants correctly point out (App. Br. 11), adding Keil's teaching regarding transfer of operational power by induction would undoubtedly require modification of Cumming's device for the proposed combination to be operational, that does not negate our conclusion of obviousness. "[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill." *KSR*, 550 U.S. at 417. Appellants have provided no evidence that such a modification produces an unexpected result, or was uniquely challenging or difficult for one of ordinary skill in the art.

Appellants present two arguments that are not commensurate with the scope of claim 1. First, Appellants argue that neither Keil nor Cumming discloses simultaneously transmitting the power and data signals. Reply Br. 13. Similarly, Appellants argue that the claimed device achieves faster setting times than the proposed combination because the power and data signals are simultaneously transmitted. App. Br. 11. Claim 1 contains no limitations related to simultaneous transmission or setting time.

Appellants argue that a person of ordinary skill in the art, knowing the disclosures of Keil and Cumming, would use the system of Keil because it is superior to the system of Cumming. Reply Br. 11-13. We know of no rule

¹ Keil, col. 1, ll. 24-26.

of law suggesting that a person of ordinary skill in the art may only use the “superior” system, ignoring alternative systems or their components. To the contrary, rather than simply selecting the “superior” overall system, the law of obviousness recognizes that a person of ordinary skill may piece references together. *KSR*, 550 U.S. at 420 (“Common sense teaches, however, that familiar items may have obvious uses beyond their primary purposes, and in many cases a person of ordinary skill will be able to fit the teachings of multiple patents together like pieces of a puzzle.”).

Appellants have failed to demonstrate error in the rejection of claim 1, and claims 2, 5, 8-10, 12-14, 18, and 21-24 fall with claim 1.

Claim 3

Claim 3 depends from claim 1 and recites that “the fuze comprises a data transmitter having an antenna; the fuze setter comprises a data receiver; and the setting data received by the fuze is verified by a reverse transmission from the fuze data transmitter to the fuze setter data receiver.”

Appellants contend the proposed combination does not meet the limitations of claim 3 because Keil discloses transmitting setting data by an inductive coil rather than an antenna. App. Br. 13-14; Reply Br. 13-14. This argument is not commensurate with the scope of claim 3. As the Examiner correctly points out (Ans. 9), the inductive coil of Keil functions as an antenna, and claim 3 does not recite any particular type of antenna and thus does not prohibit the claimed antenna from being an inductive coil.

Claims 4 and 11

Claim 4 depends from independent claim 1, and claim 11 depends from independent claim 5. Claims 4 and 11 each require that the data transmitter is within 6 inches of the data receiver.

Appellants contend that the rejection of claims 4 and 11 is in error because the references do not contain a teaching that the data transmitter is within 6 inches of the data receiver. App. Br. 14-15; Reply Br. 14. Appellants identify only one distinction between the prior art and claims 4 and 11, namely, that the data transmitter of Cummings “appears to be” positioned farther than 6 inches from the fuze.² App. Br. 14. Assuming, *arguendo*, that Cummings discloses a data transmitter that is not within 6 inches of the data receiver, the Examiner determined (Ans. 10), and we agree, that such a distinction (moving the data transmitter to within 6 inches of the data receiver) is an obvious variation of the system of Cummings. Appellants have made no showing that the particular range is critical. *In re Woodruff*, 919 F.2d 1575, 1578 (Fed. Cir. 1990) (citations omitted) (“The law is replete with cases in which the difference between the claimed invention and the prior art is some range or other variable within the claims. ... These cases have consistently held that in such a situation, the applicant must show that the particular range is *critical*, generally by showing that the claimed range achieves unexpected results relative to the prior art range.”).

² We are mindful that Appellants’ draw their conclusion regarding the spacing between the data transmitter and receiver based on a figure that is not to scale. *Hockerson-Halbertstadt, Inc. v. Avia Group Int’l*, 222 F.3d 951, 956 (Fed. Cir. 2000) (citations omitted) (“[I]t is well established that patent drawings do not define the precise proportions of the elements and may not be relied on to show particular sizes if the specification is completely silent on the issue.”).

Appellants' contend "there are practical problems with combining Cumming and Keil as proposed by the Examiner," such as a safety risk to personnel from microwaves, and potentially negating Keil's rapid firing rate. Reply Br. 14. Appellants have not asserted that the proposed combination is beyond the capability of a person of ordinary skill in the art. We see no reason why a person of ordinary skill in the art could not modify the proposed combination as needed to alleviate any safety concerns from exposure of personnel to microwaves. *See KSR*, at 418 (it is proper to "take account of the inferences and creative steps that a person of ordinary skill in the art would employ."). *See also id.* at 421 ("[a] person of ordinary skill is also a person of ordinary creativity, not an automaton."). Further, the Examiner's proposed combination uses Keil's teaching to inductively transmit power to a fuze to modify Cumming's system, so that loss Keil's rapid fire capability is not pertinent to the rejection before us for review.

Claims 6 and 7

Claim 7 depends from claim 6, which depends in turn from claim 5. Claims 6 and 7 contain the limitation "the radio frequency data receiver of the fuze comprises a radio frequency transceiver." Claim 7 further recites that a "talkback signal" is sent from the fuze transceiver to the fuze setter transceiver.

We agree with Appellants' contention (App. Br. 14-15; Reply Br. 14-15) that neither reference discloses a radio frequency transceiver. However, this contention fails to address the articulated rejection. The Examiner found, and Appellants do not contest, that Cumming discloses a fuze having a radio frequency receiver, and that Keil discloses a fuze having a

transceiver that transmits data inductively (“talkback”)³. Ans. 3-4. The proposed rejection uses Keil’s “talkback” feature to modify Cumming’s radio frequency receiver into a transceiver so that it can transmit data back to the fuze setter. Ans. 4, 10. Thus, while neither reference independently discloses a radio frequency transceiver, the combined teachings of the references meet this claim limitation. Appellants’ assertion that neither of the references individually discloses this limitation fails to demonstrate error in the rejection. *See In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986); *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references).

Claim 16

Claim 16 depends indirectly from claim 1, and contains the limitation that the reverse transmission of setting data received by the fuze is comprised of a radio signal.

Appellants contend that the rejection of claim 16 is in error because the references do not disclose or suggest the reverse transmission from the fuze to the fuze setter comprising a radio signal. App. Br. 15-16; Reply Br. 15. The analysis of the rejection of claims 6 and 7, *supra*, applies equally well here. Appellants’ individual attack on the references fails to address the rejection or to persuade us of error.

Claim 17

Claim 17 depends from claim 5 and recites that “the operational power and the pre-launch fuze setting data are transmitted simultaneously.”

³ The fuze repeats the message received from the fuze setter back to the fuze setter, or “talks back” to the fuze setter.

Appellants contend that the rejection of claim 17 is in error because a person of ordinary skill would not be motivated to place an inductive coil over the tip of the projectile fuze while the fuze is chambered in the gun barrel. App. Br. 16. The Examiner found that Keil discloses a system having an inductive coil in the fuze. Ans. 3-4. Appellants admit that Keil discloses a “receiver coil 14 *in the fuze*”. App. Br. 8 (emphasis added). Consequently, it is unclear why Appellants’ contention is premised upon placing Keil’s inductive coil in front of, rather than in, the fuze of the combined Keil and Cumming device. More importantly, the proper test is what the combined teachings of the references would have suggested to a person of ordinary skill in the art. *In re Keller*, 642 F.2d 413, 425 (CCPA 1981) (“The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those references would have suggested to those of ordinary skill in the art.”). Appellants have not asserted that such a proposed modification is beyond the capabilities of a person of ordinary skill in the art.

Rejection of claims 15, 25, and 26 under 35 U.S.C. § 103(a) as unpatentable over Cumming, Keil, and Koerner

Appellants argue the Examiner erred in rejecting claims 15, 25, and 26 by repeating three arguments discussed above. First, Appellants repeat the argument used against the rejection of claim 1, adding that Koerner does not correct the deficiencies of Cumming and Keil. App. Br. 17. For the reasons outlined in the analysis of the rejection of claim 1, *supra*, we find no deficiencies for Koerner to correct, and those arguments are unpersuasive here as well. Second, Appellants assert that the fuze could be confused by the transmission of duplicate setting data. App. Br. 17. As explained in the

analysis of claim 1, *supra*, this assertion is unconvincing because it is based on the mischaracterization that the proposed combination transmits duplicate data, when that is not the case. Third, Appellants repeat the argument used against the rejection of claim 17 regarding the positioning of Keil's coil when the fuze is in the barrel (App. Br. 17-18), and for the reasons outlined in the analysis of the rejection of claim 17, *supra*, those arguments are unpersuasive here as well.

We agree with Appellants that claims 15, 25, and 26 require simultaneously transmitting operational power by induction and setting data by electromagnetic signal. We also agree with Appellants' contention (App. Br. 17-18, Reply Br. 16) that Koerner teaches simultaneous transmission of operational power and setting data by a microwave signal. Koerner, col. 3, ll. 15-17. However, we cannot agree that these two facts demonstrate error in the rejection. The proposed rejection uses Koerner's teaching to transmit operational power and data simultaneously to further modify the Cumming device, as modified by Keil, to transmit power via induction and setting data by electromagnetic signal simultaneously. Appellants' assertion that Koerner alone does not meet this limitation is an individual attack that does not address the rejection and therefore does not demonstrate error.

CONCLUSIONS

The proposed rejection is based upon a sufficient reason with a rational underpinning to explain why one having ordinary skill in the art would have combined Cumming and Keil to reach the subject matter of independent claim 1.

The combined teachings of Cumming and Keil would have led one having ordinary skill in the art to the subject matter of claims 3, 4, 6, 7, 11, 16, and 17.

The rejection of claim 15 is not in error due to the fact that Cumming, Keil, and Koerner, taken individually, do not disclose or suggest simultaneous transmission of operational power via an inductive waveform and data transmission by electromagnetic signal.

DECISION

We AFFIRM the Examiner's decision to reject claims 1-18 and 21-26.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv) (2009).

AFFIRMED

nhl

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